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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,511	05/26/2000	Won Hyoung Park	HI-004	7993

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EXAMINER

GHULAMALI, QUTBUDDIN

ART UNIT PAPER NUMBER

2631

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No. 09/578,511	Applicant(s) PARK, WON HYOUNG	
Examiner Qutub Ghulamali	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-9 is/are allowed.
- 6) ☒ Claim(s) 1, 5, 10-13, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 2-4, 14-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 10 is objected to because of the following informality:

In claim 10, line 2, "and" (first occurrence) appears to be typographical error. --an-- is suggested. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 narrates an apparatus consisting of the plurality of channels whereas claim 1 cites no reference to plurality of channels except a quadrature component and an in-phase component.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Chalmers (US Patent No. 5,640,416).

Chalmers teaches (Figure 5a) an Analog-to-Digital converter (406) to convert an intermediate frequency signal (416) into digital signal and provide a quadrature (Q) component and an in-phase (I) component of the digital signal, (col. 7, lines 41-64). The I and the Q signals, are filtered with a poly-phase low-pass filter (501), (col. 8, lines 45-47). The outputs are dispread/demodulated (414) to the symbol rate.

5. Claims 10-13, 20, 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Efstathiou (US Patent No. 6,504,867).

Consider claim 10, Efstathiou teaches (Figure 1) a wideband digital radio receiver (10), which receives an analog signal and provides two channels of digitized signal (29) (Figure 2). The controller (62) provides phase shift adjustment, which receives a numerically controlled oscillator signal on lines (50, 52).

As per claim 11, Efstathiou teaches (Figure 2) a signal processor comprising of a Q channel and an I channel (44, 46) with phase controlled by a numerically controlled oscillator (49).

Regarding claim 12, Efstathiou further teaches an analog IF signal adapted to provide a CDMA formatted signal as desired (col. 1, lines 65-67).

As per claim 13, Efstathiou teaches (Figure 3) a QPSK modulated digital signal. As shown in Figure 4, the matched filters include a first one-half inphase component (matched FIR filter) and a second one-half quadrature component (matched FIR filter).

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With reference to claim 20 and 21, Efstathiou teaches (Figure 1) an input circuit to amplify (16) a filtered (11) CDMA formatted input signal and provides an intermediate frequency (24) based on amplified input signal and a second signal processor (28) to output first and second digital signals on first and second channels (Figure 2) and an output circuit to output signal having first and second Finite Impulse Response (FIR) filters to receive and filter the first and second digital signals, respectively (Figure 4).

Allowable Subject Matter

6. Claims 2-4 and 14-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Regarding claims 2-4, the following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or explicitly show; a digital sampler to sample the intermediate frequency (IF) signal, a zero-order hold device to determine an amplitude of the IF signal, a quantizer to convert the sampled IF signal processed by the zero-order hold device, a plurality of latches to transmit the digital signal from the quantizer to a plurality of channels after a prescribed time delay, and a plurality of output formatters to periodically output the latched digital signal transmitted to corresponding channels of the plurality of channels. Such limitations as recited in claim 2 is neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest; a plurality of negators to negate the latched digital signal and output a latched signal, and a plurality of selectors coupled to each

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of the plurality of negators to select and output one of the negated latched signal and a unprocessed latched digital signal. Such limitations as recited in claim 3 is neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest the plurality of output formatters comprise first and second output formatters, and wherein the output of each output formatters is received by a low pass filter. Such limitations, as recited in claims 4, are neither anticipated nor rendered obvious by the prior art of record.

8. Regarding claims 14-19, the following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or explicitly show, a latch circuit, which receives the digital signal and output a first signal and a second signal, wherein the second signal is a delayed first signal and an output formatter, which receives the first and second signals and outputs the first and second signals at prescribed periods. Such limitations as recited in claim 14 are neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest the latch circuit comprising a first a second and a third latch, wherein the output formatter comprises a first and a second output formatter. Such limitations as recited in claim 15 are neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest the phase shift controller provide the clock signal to the first, second, third latches to control the phase shifting, and provides a control signal to the first and second output formatters to control output periods. Such

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limitations as recited in claim 16 are neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest a plurality of negators, which receive and negate the corresponding first or second signal and a plurality of selectors to select the output one of the negated signal from the negator, wherein each one of the plurality of negators is coupled to one of the plurality of selectors. Such limitations as recited in claim 17 are neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest a sampler, which receives and samples the analog signal, a zero order hold circuit, which receives an output of the sampler and a quantizer, which receives an output of the zero order hold circuit and generates a digital signal. Such limitations as recited in claim 18 are neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest a plurality of buffers to receive and forward the clock signal and a logic circuit responsive to a buffered clock to generate a control signal to control an output of the channel separator. Such limitations as recited in claim 19 are neither anticipated nor rendered obvious by the prior art of record.

9. Claims 6-9 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or explicitly show; a digital sampler to sample the intermediate frequency (IF) signal, a zero-order hold device to determine an amplitude of the IF signal, a quantizer to convert the sampled IF signal processed by the zero-order hold device, a plurality of latches to transmit the digital signal from the quantizer to a plurality of channels after a

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prescribed time delay, and a plurality of output formatters to periodically output the latched digital signal transmitted to corresponding channels of the plurality of channels. Such limitations as recited in claim 6 is neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest; a plurality of negators to negate the latched digital signal and output a latched signal, and a plurality of selectors coupled to each of the plurality of negators to select and output one of the negated latched signal and a unprocessed latched digital signal. Such limitations as recited in claim 7 is neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest the plurality of output formatters comprise first and second output formatters, and wherein the output of each output formatters is received by a low pass filter. Such limitations, as recited in claims 8, are neither anticipated nor rendered obvious by the prior art of record.

Similarly, the prior art does not teach or fairly suggest the plurality of channels comprise an In-phase channel and a Quadrature channel. Such limitations, as recited in claims 9, are neither anticipated nor rendered obvious by the prior art of record.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bazarjani et al (6,005,506), Tan (5,990,820), Paul (6,198,417), Chelehmal et al (6,292,126), Ozluturk (6,026,117), and Moriyama (6,307,879) are cited as references because

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they all provide information pertaining to demodulation in a spread spectrum communication system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (703) 305-7868. The examiner can normally be reached during normal business days from Monday-Friday from 8:00AM- 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 703 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are 703 305-3988 for regular communications and 703 305-3988 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-4750.

QG.
January 16, 2003



DON N. VO
PRIMARY EXAMINER